City of Long Beach **Memorandum**
Working Together to Serve

Date: March 15, 2017

To: Medical Marijuana Dispensary Applicants

From: Nelson Kerr, Environmental Health Manager

Subject: Laboratory Testing of Medical Marijuana and Medical Marijuana Products

Pursuant to Long Beach Municipal Code (LBMC) Section 5.90.060, all licensed Medical Marijuana Dispensaries ("Dispensaries") in the City of Long Beach are required to have representative samples of any medical marijuana that will be sold by the business analyzed and tested by an independent laboratory for concentration, pesticides, mold and other contaminants regulated under local, state, or federal law. Sale of untested medical marijuana products is a violation of LBMC Chapter 5.90, subject to penalties and/or revocation of the Dispensary business license.

The independent laboratories that will be performing such testing will be licensed as a Type 8 Testing Laboratories under the Medical Cannabis Regulation and Safety Act (MCRSA) upon implementation in approximately January 2018. Until such time as the State is issuing MCRSA Type 8 Testing Laboratory licenses, the City will permit Dispensaries to utilize the existing network of ISO 17025 certified marijuana testing labs located throughout the state. Marijuana Testing Laboratories that have obtained ISO 17025 certification will be deemed to have met the operating conditions set forth in LBMC Section 5.90.0120.

The City will also be opening up the application process for testing laboratories to obtain a local Medical Marijuana Testing Laboratory business license. Due to the requirements for testing laboratories, licenses most likely won't be issued until the end of 2017. This delay is necessary to allow Testing Laboratories an opportunity to obtain ISO certification from a third party accrediting agency pursuant to LBMC Section 5.90.0120.

City staff has prepared a "List of ISO Certified Labs" (Attachment A) identifying all of the Marijuana Testing Laboratories in California that are ISO 17025 certified. Dispensaries are required to ensure that representative samples of marijuana and marijuana products are tested at one of the facilities included in the List of ISO Certified Labs until labs are issued a MCRSA Type 8 license and/or a local license. The City of Long Beach Health Department will confirm, through inspection, that all marijuana and marijuana products are tested at one of the approved labs. If City staff is made aware of other ISO certified labs that exist in California, or if other labs obtain ISO certification after this list was prepared, staff will update the list to include these additional labs.

Laboratory Testing Results

Pursuant to LBMC Section 5.90.0120, all testing shall be compliant with the MCRSA standards. MCRSA establishes minimum requirements for what types of analytes (chemicals, compounds, microorganisms, etc.) must be tested for by a Medical Marijuana Laboratory (Attachment B). These analytes must be included in the Certificate of Analysis provided by the Testing Laboratory, and maintained on record by the licensed Dispensary. During Health Department inspections, City staff will check to confirm that Certificates of Analysis for marijuana products sold at the Dispensary contain minimum information on tested analytes required under MCRSA, from an ISO certified lab.

MCRSA also sets limits for levels of contaminants that tested marijuana and marijuana products may not exceed (Attachment C). MCRSA requires that:

[T]he presence of contaminants does not exceed the levels that are the lesser of either the most current version of the American Herbal Pharmacopoeia monograph or the State Department of Public Health... Residual levels of volatile organic compounds shall be below the lesser of either the specifications set by the United States Pharmacopeia (U.S.P. Chapter 467) or those set by the State Department of Public Health.[1]

Given that the State Department of Public Health has not set maximum levels for contaminants or volatile organic compounds, marijuana test results shall be held to the maximum levels established by the American Herbal Pharmacopoeia and the United States Pharmacopeia, respectively. Should any marijuana products be found to exceed these limits, the Dispensary will be responsible for ensuring that none of that product is sold to patients. Sale of medical marijuana product that exceeds maximum levels for contaminants will be deemed a violation of LBMC Chapter 5.90.

Product Packaging

Pursuant to Section 19347 of the California Business and Professions Code, packages of medical cannabis and medical cannabis products sold at a dispensary shall meet the following requirements:

1) *Medical cannabis packages and labels shall not be made to be attractive to children.*
2) *All manufactured and edible medical cannabis products shall be sold only in special packaging constructed to be child-resistant unless otherwise exempted by regulation.*
3) *Only generic food names may be used to describe edible medical cannabis products.*

In addition, all medical cannabis and medical cannabis product labels shall include the following information, prominently displayed and in a clear and legible font:

1) *Cultivation and manufacture date and source.*
2) *The statement "SCHEDULE I CONTROLLED SUBSTANCE."*
3) *The statement "KEEP OUT OF REACH OF CHILDREN AND ANIMALS" in bold print.*
4) *The statement "FOR MEDICAL USE ONLY."*

[1] California Business and Professions Code § 19344(a)(2), (b).

5) *The statement "THE INTOXICATING EFFECTS OF THIS PRODUCT MAY BE DELAYED BY UP TO TWO HOURS."*
6) *The statement "THIS PRODUCT MAY IMPAIR THE ABILITY TO DRIVE OR OPERATE MACHINERY. PLEASE USE EXTREME CAUTION."*
7) *For packages containing only dried flower, the net weight of medical cannabis in the package.*
8) *A warning if nuts or other known allergens are used in the manufacturing of the medical cannabis products.*
9) *List of ingredients and pharmacologically active ingredients, including, but not limited to, tetrahydrocannabinol (THC), cannabidiol (CBD), and other cannabinoid content, the THC, CBD, and other cannabinoid amount in milligrams per serving, servings per package, and the THC, CBD, and other cannabinoid amount in milligrams for the package total.*
10) *Clear indication, in bold type, that the product contains medical cannabis.*

Sale of medical marijuana product that does not meet minimum requirements for packaging and labeling will be deemed a violation of LBMC Chapter 5.90.

For more information, please contact the medical marijuana hotline at (562) 570-5150.

Attachment A

List of ISO Certified Medical Marijuana Testing Laboratories

1. PharmLabs
1859 Cable Street
San Diego, CA 92107
(619) 356-0898
info@sdpharmlabs.com
sdpharmlabs.com

2. SC Labs*
100 Pioneer Street, Suite E
Santa Cruz, CA 95060
(866) 435-0709
info@sclabs.com
sclabs.com

3. CW Analytical
Oakland, CA 94621
(510) 545-6984
lab@cwanalytical.com
cwanalytical.com

4. Canna Safe Analytics
26359 Jefferson Ave, Suite G
Murrieta CA, 92562
(951)239-3239
info@csalabs.com
csalabs.com

*Note: SC Labs has multiple testing labs operating throughout California. However, only the Santa Cruz lab is ISO 17025 certified. Therefore, only samples tested at the Santa Cruz location will be considered to have satisfied the Long Beach Medical Marijuana testing requirements.

Attachment B

Minimum Medical Marijuana Testing Requirements

1. A licensed testing laboratory shall issue a certificate of analysis for each lot, with supporting data, to report the following:
    a. Whether the chemical profile of the lot conforms to the specifications of the lot for compounds, including, but not limited to, all of the following:
        i. Tetrahydrocannabinol (THC).
        ii. Tetrahydrocannabinolic Acid (THCA).
        iii. Cannabidiol (CBD).
        iv. Cannabidiolic Acid (CBDA).
        v. The terpenes described in the most current version of the cannabis inflorescence monograph published by the American Herbal Pharmacopoeia.
        vi. Cannabigerol (CBG).
        vii. Cannabinol (CBN).

2. That the presence of contaminants does not exceed the levels that are the lesser of either the most current version of the American Herbal Pharmacopoeia monograph or the State Department of Public Health. For purposes of this paragraph, contaminants includes, but is not limited to, all of the following:
    a. Residual solvent or processing chemicals
        i. ***(see Attachment C, Tables 1 & 2)***
    b. Foreign material, including, but not limited to, hair, insects, or similar or related adulterant.
        i. ***(see Attachment C, Table 3)***
    c. Microbiological impurity, including total aerobic microbial count, total yeast mold count, P. aeruginosa, aspergillus spp., s. aureus, aflatoxin B1, B2, G1, or G2, or ochratoxin A.
        i. ***(see Attachment C, Table 4)***
    d. Whether the batch is within specification for odor and appearance.

3. Residual levels of volatile organic compounds shall be below the lesser of either the specifications set by the United States Pharmacopeia (U.S.P. Chapter 467) or those set by the State Department of Public Health.

4. That the medical marijuana product is free of harmful pesticides and other contaminants regulated under local, state or federal law. At this time, neither the United States Environmental Protection Agency, nor the State of California Department of Pesticide Regulation, have established appropriate pesticide tolerances for, or permitted the registration and lawful use of, pesticides on cannabis crops intended for human consumption. Until the State Department of Pesticide Regulation releases limits on pesticide levels in medical marijuana products, the City of Long Beach has recommended <u>local</u> pesticide limits, using standards developed by the State of Oregon that regulate pesticide levels for medical marijuana. These limits are available as reference to help businesses and patients determine acceptable levels of pesticides in marijuana products. This list shall be made available to patients upon request.
    i. (See Attachment C, Table 5)

Attachment C

American Herbal Pharmacopoeia and United States Pharmacopeia

Tables 1 & 2 – Residual Solvent Limits

Solvents are categorized in 3 classes. Class 1 includes known carcinogens, toxic substances, and environmental hazards such as benzene, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethene, and 1,1,1-trichloroethane. These are to be avoided in the manufacture of herbal and/or pharmaceutical products. Class 2 and 3 **(Table 1)** solvents are distinguished based on their relative toxicity level. Limits established for permissible daily exposures are determined individually for Class 2 solvents. Limits for Class 3 solvents are set at a general limit of 50 mg/day. In addition, there are solvents for which no adequate toxicological data was found **(Table 2)** and requires manufacturers of pharmaceutical products that choose to use these solvents to supply justification for residual levels of these solvents in their final products. Petroleum ether, found in this group, is reportedly used in the production of hash oil.

Solvent extracted products made with Class 3 or other solvents, are not to exceed 0.5% residual solvent by weight or 5000 parts per million (PPM) per 10 gram of solvent-based product and are to be quantified according to the United States Pharmacopeia, Chapter 467, Residual Solvents, Option 1. Higher concentrations may also be acceptable provided they are realistic in relation to safety, manufacturing, and good manufacturing practices.

(See next page)

Table 1 - Permissable and restricted solvents in the manufacture of cannabis preparations		
Class 2 solvents		Class 3 solvents
Solvent	Permissible daily exposure, mg/day	Permissible daily exposure: 50 mg/day
Acetonitrile	4.1	Acetic acid
Chlorobenzene	3.6	Acetone
Chloroform*	0.6	Anisole
Cyclohexane	38.8	1-Butanol
1.2-Dichlorothene	18.7	2-Butanol
Dichloromethane*	6.0	Butyl acetate
1,2-Dimethoxyethane	1.0	tert-Butylmethylether
N,N-Dimethylacetamide*	10.9	Cumens*
N,N-Dimethylformamide	8.8	Dimethyl sulfoxide
1,4-Dioxane*	3.8	Ethanol*
2-Ethoxyethanol	1.6	Ethyl acetate
Ethyleneglycol	6.2	Ethyl ether
Formamide	2.2	Ethyl formate
Hexane	2.9	Formic acid
Methanol*	30.0	Heptane
2-Methoxyethanol	0.5	Isobutyl acetate
Methylcyclohexane	11.8	Methyl acetate
N-Methylpyrrolidone*	5.3	3-Methyl-1-butanol
Nitromethane*	0.5	Methylethyl ketone
Pyridine*	2.0	Methylisobutyl ketone
Sulfolane	1.6	2-Methyl-1 -propanol
Tetrahydrofuran	7.2	Pentane
Tetralin	1.0	1-Pentanol
Toluene*	8.9	1-Propanol
1, 1,2-Trichloroethene	0.8	2-Propanol
Xylene	21.7	Propyl acetate

Table 2 - Solvents for which no adequate toxicological data was found	
1, 1-Diethoxypropane	Methylisopropyl ketone
1, 1-Dimethoxymethane	Methyltetrahydrofuran
2,2-Dimethoxypropane	Petroleum ether
Isooctane	Trichloroacetic acid
Isopropyl ether	Trifluoroacetic acid

Table 3 – Heavy metal limits

The American Herbal Products Association (AHPA) provides manufacturers of herbal products with general recommendations for maximum heavy metals levels in herbal products, based on the daily product intake amount **(Table 3)**.

Table 3 - Metal limits recommended for herbal products in the US	
Contaminating metal	**Limit, pg/daily dose**
Inorganic arsenic	10.0
Cadmium	4.1
Lead	6.0
Methyl mercury	2.0

Table 4 – Microbiological impurity limits

Recommended tolerance limits for cannabis products are provided in **Table 4** and were based on a review of national and international recommendations for botanical products as well as discussion with a variety of stakeholders (e.g., Washington State). Additional guidance for botanical products is provided in national and international compendia based on oral consumption of finished botanical products. Additionally, more restrictive limits may be adopted for medical use of cannabis, most notably when used by immune compromised individuals. Microbes such as Aspergillus spp., for example, can be transmitted through inhalation and are of specific concern in those with specific medical conditions (e.g. chronic granulamatous disease and cystic fibrosis) and when employing specific medical treatments (e.g., immunosuppressive therapies).

Table 4 - Microbial and fungal limits recommended for orally consumed botanical products in the US (CFU/g)					
Material Type	**Total viable aerobic bacteria**	**Total yeast and mold**	**Total coliforms**	**Bile-tolerant gram-negative bacteria**	**E. coli (pathogenic straints) and Salmonella spp.**
Unprocessed materials*	10^5	10^4	10^3	10^3	Not detected in 1 g
Processed materials*	10^5	10^4	10^3	10^3	Not detected in 1 g
CO2 and solvent-based extracts	10^4	10^3	10^2	10^2	Not detected in 1 g

Table 5 – Pesticide Limits

Table 5 - Pesticide analytes and their action levels		
Analyte	**Chemical Abstract Services (CAS) Registry Number**	**Action level ppm**
Abamectin	71751-41-2	0.5
Acephate	30560-19-1	0.4
Acequinocyl	57960-19-7	2.0
Acetamiprid	135410-20-7	0.2
Aldicarb	116-06-3	0.4
Azoxystrobin	131860-33-8	0.2
Bifenazate	149877-41-8	0.2
Bifenthrin	82657-04-3	0.2
Boscalid	188425-85-6	0.4
Carbaryl	63-25-2	0.2
Carbofuran	1563-66-2	0.2
Chlorantraniliprole	500008-45-7	0.2
Chlorfenapyr	122453-73-0	1.0
Chlorpyrifos	2921-88-2	0.2
Clofentezine	74115-24-5	0.2
Cyfluthrin	68359-37-5	1.0
Cypermethrin	52315-07-8	1.0
Daminozide	1596-84-5	1.0
DDVP (Dichlorvos)	62-73-7	0.1
Diazinon	333-41-5	0.2
Dimethoate	60-51-5	0.2
Ethoprophos	13194-48-4	0.2
Etofenprox	80844-07-1	0.4
Etoxazole	153233-91-1	0.2
Fenoxycarb	72490-01-8	0.2
Fenpyroximate	134098-61-6	0.4
Fipronil	120068-37-3	0.4
Flonicamid	158062-67-0	1.0
Fludioxonil	131341-86-1	0.4

Analyte	**Chemical Abstract Services (CAS) Registry Number**	**Action level ppm**
Hexythiazox	78587-05-0	1.0
Imazalil	35554-44-0	0.2
Imidacloprid	138261-41-3	0.4
Kresoxim-methyl	143390-89-0	0.4
Malathion	121-75-5	0.2
Metalaxyl	57837-19-1	0.2
Methiocarb	2032-65-7	0.2
Methomyl	16752-77-5	0.4
Methyl parathion	298-00-0	0.2
MGK-264	113-48-4	0.2
Myclobutanil	88671-89-0	0.2
Naled	300-76-5	0.5
Oxamyl	23135-22-0	1.0
Paclobutrazol	76738-62-0	0.4
Permethrins*	52645-53-1	0.2
Phosmet	732-11-6	0.2
Piperonyl_butoxide	51-03-6	2.0
Prallethrin	23031-36-9	0.2
Propiconazole	60207-90-1	0.4
Propoxur	114-26-1	0.2
Pyrethrins†	8003-34-7	1.0
Pyridaben	96489-71-3	0.2
Spinosad	168316-95-8	0.2
Spiromesifen	283594-90-1	0.2
Spirotetramat	203313-25-1	0.2
Spiroxamine	118134-30-8	0.4
Tebuconazole	80443-41-0	0.4
Thiacloprid	111988-49-9	0.2
Thiamethoxam	153719-23-4	0.2
Trifloxystrobin	141517-21-7	0.2

* Permethrins should be measured as cumulative residue of cis- and trans-permethrin isomers (CAS numbers 54774-45-7 and 51877-74-8).

† Pyrethrins should be measured as the cumulative residues of pyrethrin 1, cinerin 1 and jasmolin 1 (CAS numbers 121-21-1, 25402-06-6, and 4466-14-2).